

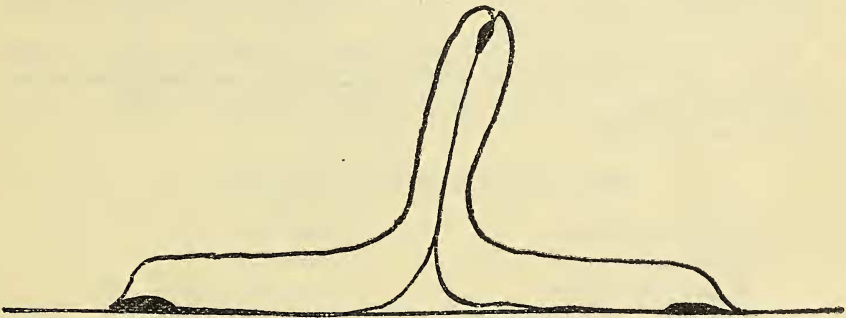
19. SEXUAL BEHAVIOUR OF LAND LEECHES

(With a text figure)

I do not know of any description of the process of copulation in land leeches, so the following observations on what seem to be copulation, incomplete though they are, may be of interest.

On July 29th, 1953 I was travelling among the foothills of the mountain Trus Madi in North Borneo at an altitude of about 4,000 ft. Land leeches of the species *Haemadipsa picta* Moore and *H. zeylanica* (Moquin-Tandon) were frequent and annoying, and I was wearing rubber and canvas hockey boots, the canvas of which had been impregnated with Di-methyl-phthalate. With this treatment the leeches will not venture onto the canvas of the boot, but will wander freely on the rubber parts.

The going was heavy, and during a short halt for rest I was idly watching two full-grown specimens of *H. zeylanica*, each about 3 inches (70 mm.) long when extended, making their way round the welt of my left boot. They were going in opposite directions, and met, head to head, on the toecap. After some preliminary muzzling the specimens joined, front sucker to front sucker and appeared to embrace, remaining together until disturbed half an hour later.



Each leech had the hind sucker and the posterior half of the body in close contact with the boot. The anterior half of each leech stood out at right angles to the boot and was slightly flattened, and these two anterior halves were pressed tightly together, ventral surfaces in contact, and sucker to sucker, as shown in the diagram. The joined pair were slightly curved, convexity towards that leech which was slightly the larger. In this position they remained almost motionless, except for a continuous slight swaying backwards and forwards and a slight variation in the flattening of the bodies. The whole process looked very much like a human embrace in the most passionate Hollywood style.

The embrace continued for half an hour when it became imperative to continue the journey. The leeches were transferred

to a stoppered tube where after a short break they resumed their embrace and continued for at least an hour more. Owing to lack of facilities on the journey, they later died in the tube.

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August, 1953.

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20. THE SPECIES OF *CROTALARIA* IN BOMBAY

The genus *Crotalaria* is a common one in Bombay particularly just after the rains. The identification of the genus is easy enough, on account of the typical, swollen pod; but to come down to the species from the keys provided in Cooke's Flora is not a simple matter. In my field work I have made use of the following key of my own and by its use the determination of species has been rendered a little more easy. With a view to help other botanists, who may have experienced the same difficulties, I have been induced to publish the key.

In the use of the key, please note that all the lines headed by the same number are alternatives, and all these should be studied carefully before deciding on the species. The presence or absence of stipules should be noted; and since in some of the species the stipules are minute or consist apparently of a very fine hair-like structure covered with hairs, one is apt to miss their presence or to confuse them with the ordinary hairs of the stem.

In collecting *Crotalaris* for identification, it should be made a point in every case to collect both flowers and fruits, especially the latter, since they form one of the most typical characters of the various species in the genus.

KEY TO THE SPECIES OF *Crotalaria*

1. Leaves simple :
 2. Pods glabrous :
 3. Stipules absent :
 4. Corolla exserted or longer than the calyx :
 5. Prostrate herbs; stems filiform with spreading hairs; leaves $6 - 15 \times 3 - 7$ mm.; flowers in leaf-opposed or extra-axillary racemes; seeds $8 - 10$... *filipes*
 5. Erect herbs; stems not filiform :
 6. Stems silky; leaves more or less silky :
 7. Leaves pellucido-punctate; seeds $6 - 12$... *albida*
 7. Leaves not punctate; seeds $4 - 10$... *linifolia*
 6. Stems glabrous; leaves $75 - 180 \times 3 - 18$ mm. glabrous; seeds many ... *lutescens*
 4. Corolla not exserted, or shorter than the calyx :
 8. Racemes capitate :
 9. Upper calyx teeth connate ... *nana*